

Academic Promotion Discipline Statement

Discipline area:	Engineering
Discipline:	Geomatic Engineering
Sub discipline:	Geospatial (Geographic) Information Systems and Data Modelling
School:	Agricultural, Environmental and Veterinary Sciences

Discipline Overview

The sub-discipline of Geographic Information Systems and Data Modelling (spatial science) capture and analyse spatial and geographic data through specialised geographic information systems. These skills and techniques can be applied to any number of areas, including but not limited to environmental science, agriculture, health, engineering, computer science and social science.

This discipline emerged in the 1970s, including Geographic Information Science, Remote Sensing, Cartography, Surveying and related disciplines. Spatial scientists may come from a wide variety of discipline backgrounds, and their undergraduate degree is often not in spatial sciences. However, a PhD in Spatial Sciences, Geography or a related discipline with a strong focus on applied spatial sciences is expected. A spatial scientist will often also have a level of expertise in an applied discipline.

At Charles Sturt, spatial science is nested within the area of environmental sciences.

A typical career path for an academic in this discipline after completion of a PhD is appointment to an academic position in a research or teaching/research institution. Academics in this area may have worked in government or industry before joining academia, but industry-related experience is not required.

Gender Profile

Profession/Industry Source: Job Outlook (2018)	34% female / 66% male (Surveyors and Spatial Scientists)
Higher Education Sector	Data not currently available
Charles Sturt University	25% female / 75% male

Discipline Context and Expectations

INDUSTRY ACCREDITATION	The discipline is not subject to accreditation requirements.
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DISCIPLINE PEDAGOGIES	<p>The teaching norms in this discipline include the design, development and delivery of lectures and computer-based workshops, teaching spatial science theory and application. In addition there can be short occasional on-campus field trips to demonstrate equipment.</p> <p>As spatial sciences is a rapidly evolving discipline, due to continuous advances in technology and applications, all academics in this discipline are expected to show autonomy in developing and refining subject content.</p>
STUDENT PROFILE	<p>Students are predominately mature age and domestic, with very few being international. The students range widely in age, the norm being from 25 to 45, and over. The gender profile of the cohort is generally balanced. The majority of students already work in or are moving into the industry.</p> <p>In this discipline students studying undergraduate subjects both online and face-to-face, are generally undertaking degrees in environmental science, emergency management, and parks, recreation and heritage, or other science degrees. Postgraduate students are generally undertaking the Master of GIS and Remote Sensing. Classes range in size from less than 10 for postgraduate subjects to over 100 for online undergraduate subjects.</p>
STUDENT FEEDBACK/PERFORMANCE	<p>The SuES response rate and scores for smaller postgraduate subjects can be variable.</p>
RESEARCH APPROACH	<p>Collaborative research and publication authorship are expected in this discipline.</p> <p>Geospatial analysis contributes to the application of research and the analysis of wider environmental issues for regional and national projects facilitated by community, government and other organisations. Its specialist nature means the contribution of spatial scientists is often complementary to the research question, and focuses on the design of the methodology, development of statistical measures and data analysis.</p>
PUBLICATION	<p>In this discipline publication in international journals is expected, and research outputs are most commonly peer reviewed journal articles. Collaborative research with multiple authorship across disciplines is the norm. Research may be published in spatial science-specific journals or in related applied discipline journals. The norms for journal ranking, quality and output vary depending on the discipline application.</p> <p>Publications in government and other statutory organisation reports are also common and can have significant impact on policy and public management decisions. Research for government and statutory organisations is usually complimentary to other disciplines, and collaborative in its focus.</p> <p>As research contribution in this discipline is often complementary to the research question, authors often appear last in the author's list; however, this does not indicate a minor contribution, instead one of significant complementarity.</p>



	<p>Word count for publications and journal articles is variable and not relevant in this discipline; quality is more important. The expected average output in this area is generally one to two quality journal articles annually depending on the academic's level.</p> <p>Books and book chapters are rare in this discipline.</p>
CONFERENCES	<p>While there are no specific conferences of note in this discipline, conference invitations and presentations are highly regarded.</p> <p>It is normal for academics in this discipline to attend full paper competitive conferences. Presentation at such conferences is highly regarded and can precede article submission in peer reviewed journals.</p>
GRANTS	<p>External grant funding is rarely available in spatial sciences specifically however, it is expected academics in this discipline attract research grants in applied disciplines as part of a team.</p> <p>Rarely would academics have the option to be a part of group grants.</p>
HDR SUPERVISION	<p>Honours and HDR supervision is expected in this discipline, however there are limited opportunities for pure spatial science supervision in this discipline at the University. Therefore, academics in the discipline are more likely to co-supervise HDR students from other disciplines.</p>
RECOGNITION	<p>No unique industry specific award or fellowships.</p>
EXTERNAL ENGAGEMENT	<p>No unique external engagement requirements in this discipline.</p>
PROFESSIONAL REGISTRATION	<p>There is no mandatory professional registration requirement in this discipline. However, academics may be members of professional bodies, such as the Surveying and Spatial Sciences Institute (Australia) SSI.</p>

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